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PATENTS 03-07-02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Jean-Pierre MARTEL et al.

Docket No.: BDL-53

Serial No. 09/998,710

Group Art Unit

Filed: November 30, 2001

Examiner:

For: PROCESS AND APPARATUS FOR THE INTEGRAL UTILIZATION OF
OIL-PRODUCING DRUPES, PARTICULARLY OLIVES, AND SPECIFIC
PRODUCTS OBTAINED

600 Third Avenue
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February 26, 2002

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FEB 27 2002
S. Holmquist
Director of Patents and Trademarks

Assistant Commissioner
for Patents
Washington, D. C. 20231

INFORMATION DISCLOSURE STATEMENT

SIR:

Enclosed is a copy of a French Search Report from the
corresponding French patent application, form PTO-1449 citing each
of the references, and a copy of each of the cited references.

Applicants' invention is concerned with the processing of
fruits of the type comprising oil-producing drupes with an epicarp
or skin, a mesocarp or pulp, and an endocarp or stone. One notable
fruit which can be processed by the present invention is olives.
Separation of the fruit into the three components, skin, pulp and

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stone, is accomplished by the physical destruction of the fruit under conditions which substantially avoid the oxidation of the pulp's natural antioxidants. Oxidation which degrades the quality of the pulp oil was a problem in the art because of grinding methods over long durations and exposure to air stream that were introduced.

In the present invention, the fruit is first preheated to cause evaporation of the water in the pulp. This heating favors cellular destructuring limited to the pulp and causes the incipient detachment of the pulp from the skin and the stone. This heating takes place in a reduced pressure enclosure, which causes quasi-instantaneous evaporation of the water in the pulp, resulting in disrupting the pulp cells. Next, physical separation of the skin, stone, and pulp resulting from the cellular destructuring is employed to recover these products. All of these steps are performed under conditions which substantially avoid the oxidation of the pulp's antioxidants, thereby improving the oxidation resistance of the oil.

Thus, the process of the present invention employs a first preheating step in a reduced atmosphere to start the separation of the three components of the fruit and a second subsequent step to physically separate the three components of the fruit. Both steps are conducted under conditions which avoid oxidation of the pulp's antioxidants.

The following prior art has been cited in the French Preliminary Search Report issued in the French priority patent application. Applicants present the following comments to distinguish the present invention from the cited references.

1. FR 569,578 - Kammerman

Although written in French, this reference is reported to be primarily related to low moisture seeds. This process is not extrapolatable to olives, which are high in moisture.

Kammerman describes a first step of grinding of the full fruit. Thus, an oxidation and a mix of the fruit components takes place.

On the other hand, the present invention describes a preheating first step which is performed in a distinct enclosure at a pressure below atmospheric pressure, namely, under partial vacuum, and which allows a continuous process to proceed.

These two technical essential features are not described in Kammerman.

Under these conditions, the cited reference is not relevant.

2. GB 1,209,675 - Humphreys & Glasgow LTD

Humphreys discloses that enzymes present in fruits should be destroyed by heating in order to avoid losses of oil due to the enzymes action during processing of the fruits (1, 13). In contrast, applicants seek to increase the intracellular water

temperature contained in the pulp. In the present invention, the enzymatic inactivation is only partial and heating is only aimed at the aforementioned three component detachment, which is performed in a reduced pressure enclosure by a quasi-instantaneous evaporation of water in the pulp, resulting in disrupting the pulp cells.

In addition, Humphreys does not contemplate the use of a reduced pressure enclosure to cause disrupting of the pulp cells.

Detachment of the skin, pulp and stone is accomplished by applicants' invention in a reduced pressure enclosure, which disrupts the pulp cells.

On the other hand, Huymphreys accomplishes its separation in a digester through pressing and solvent treatment (2, 25-37).

3. WO99/16322 - Kourtzis

Kourtzis discloses a mechanical processing method for olives. This process physically breaks large olive stones in a pair of streaked cylinders, followed by a pair of closely positioned cylinders to break smaller stones. The sperm of the olive stone is isolated from the broken stones by centrifugation or extraction, while the rest of the stone is mixed with the olive pulp so that olive oil can be produced.

In contrast to applicants' invention, Kourtzis does not preheat the olives. Furthermore, Kourtzis' mechanical separation allows oxidation of the fruit components, which applicants seek to eliminate.

Additionally, Kourtzis describes that crushed stones are mixed in the fruit puree to constitute a "ligneous support" to facilitate oil extraction. In applicants' invention, a ligneous support is not needed, the oil extraction is facilitated through the destruction of the pulp cellular tissues under quasi-instantaneous water evaporation.

4. EP 0,421,956 - Franca

Franca is concerned with the utilization of the resulting pulp paste as a load for the preparation for an animal food product, not the separation of the three components of the fruit and the recovery of the oil from the pulp.

5. GB 367,751 - Philippou

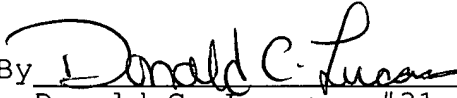
Philippou is concerned with the use of oil seed cakes to convert sugar into ethyl alcohol by fermentation, not the separation of the three components of the fruit and the recovery of the oil from the pulp.

All of the other references were cited as Category "A" and are not deemed relevant.

Respectfully submitted,

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INFORMATION DISCLOSURE CITATION
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U.S. PATENT DOCUMENTS

INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
AA						
AB						
AC						
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FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
AL	5 6 9 5 7 8	14-4-24	France				
AM	1 2 0 9 6 7 5	21-10-70	Great Britain				
AN	99 1 6 3 2 2	8-4-99	WO				
AO	EP 4 2 1 9 5 6	10-4-91	Europe				
AP	3 6 7 7 5 1	25-2-32	Great Britain				

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	R.S. Farag et al.: "Stabilization of Olive Oil by Microwave Heating" INTERNATIONAL JOURNAL OF FOOD SCIENCES AND NUTRITION. Vol. 48, No. 6, 1997, pages 365-371
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FORM PTO-1449
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						YES	NO
AC	2 4 2 2 7 1 3	9-11-79	France				
AM	00 2 3 5 4 5	27-4-00	WO				
AN	8 0 3 6 0 9	5-4-51	Germany				
AO	94 0 0 5 4 1	6-1-94	WO				
AP							

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